

**ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
AND OHIO DEPARTMENT OF TRANSPORTATION
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. 34682, DATED 5/7/2021
(ANNEX NUMBER 3)**

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of establishing how NASA (also referred to as NASA ARC”) and ODOT (also referred to as “Partner”) will work together and share knowledge to advance increasingly autonomous cargo operations, focusing on their integration in the airspace.

Under this Annex, ODOT intends to collaborate with industry to conduct a flight demonstration that assesses increasingly autonomous aircraft operations between airports. This flight demonstration would provide NASA with information on the state-of-the-art of airspace integration and challenges that must be addressed to achieve routine operations. NASA intends to support this flight demonstration by providing expertise and insights from research that is identifying roles and responsibilities and function allocation tradeoffs for increasingly autonomous aircraft operations, which will provide valuable insight into the scalability of the ODOT flight demonstration concept and the gaps that must be addressed to advance to higher levels of autonomy. NASA will observe the flight demonstration but will not be responsible for the conduct of the flight demonstration itself nor any associated flight approval processes.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e).

ARTICLE 2. RESPONSIBILITIES

A. NASA ARC will use reasonable efforts to:

1. Participate in a kickoff meeting with Partner.
2. Participate in coordination meetings with Partner as needed.
3. Host at least one workshop with the FAA and industry to identify airspace integration needs.
4. Provide documentation of airspace integration use cases for remotely piloted and autonomous cargo operations.
5. Review and provide recommendations on Partner concept descriptions, procedures and other applicable documents for the Partner-led flight demonstration.
6. Incorporate relevant Partner flight demonstration concepts and procedures into the NASA Research concept of use, which will inform NASA research.
7. Attend relevant Partner flight demonstration safety reviews and FAA coordination meetings as an observer to gather insights into safety considerations and the motivation for any operational limitations that must be addressed for scalable operations.

8. Observe Partner flight demonstration(s).
9. If permitted by the FAA, provide research staff at relevant Air Traffic Control (ATC) facilities to observe flight demonstrations.
10. Co-author with ODOT, the development of a publicly available documentation, based on results of ODOT's flight demonstrations, that describes best practices for routine remotely piloted or autonomous cargo operations, including identification of any flight demonstration operational restrictions and recommendations for work necessary to eliminate those operational restrictions.
11. Discuss future opportunities to test NASA airspace technologies during Partner flight demonstration(s) in follow-on agreements.

B. Partner will use reasonable efforts to:

1. Participate in a kickoff meeting with NASA.
2. Participate in coordination meetings with NASA as needed.
3. Work with NASA to develop a joint communications plan and allow NASA to review public relations and media outreach related to this agreement.
4. Attend NASA airspace integration workshop.
5. Provide a flight demonstration plan for flight demonstration(s) that describes key attributes of Partner-led flight demonstrations (e.g., the flight route, roles and responsibilities, infrastructure assumptions, autonomy assumptions, etc.)
6. Conduct one or more flight demonstration(s) that emulate remotely piloted or autonomous cargo missions.
7. Invite NASA to observe relevant Partner flight demonstration safety reviews and FAA coordination meetings, which will provide insights into safety considerations that result in operational limitations to the flight demonstration(s).
8. Ensure that approvals needed to support the flight demonstration (e.g., COAs, 91.113 waivers, exemptions, spectrum approvals, and relevant safety documentation) are received and that required airworthiness processes have been coordinated with the FAA or other relevant public-use authorities.
9. Co-author with NASA, the development of a publicly available documentation, based on results of ODOT's flight demonstrations, that describes best practices for routine remotely piloted or autonomous cargo operations, including identification of any flight demonstration operational restrictions and recommendations for work necessary to eliminate those operational restrictions.
10. Discuss future opportunities to test NASA airspace technologies during Partner flight demonstration(s) in follow-on agreements.

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

Milestone	Estimated Completion Date
NASA and Partner kickoff meeting slides	Within 1 month of Effective Date

Joint Communication Plan	Within 3 months of Effective Date
NASA airspace integration workshop	Within 6 months of Effective Date
NASA airspace integration use cases documentation	Within 14 months of Effective Date
Partner Flight Demonstration Plan documentation	Within 14 months of Effective Date
Partner flight demonstration approval documents	Within 23 months of Effective Date
Partner flight demonstration	Within 24 months of Effective Date
NASA flight demonstration best practices document	Within 27 months of Effective Date

ARTICLE 4. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, (31 U.S.C. § 1341).

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

- A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of one year.
- B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.
 1. Background Data: The Disclosing Party's Background Data, if any, will be identified in a separate technical document.
 2. Third Party Proprietary Data: The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.
 3. Controlled Government Data: The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.
 4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement: None

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and

shall remain in effect until the completion of all obligations of both Parties hereto, or until March 31, 2025, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Management Points of Contact

NASA Ames Research Center

Nahri Ahn
Agreement Manager
Moffett Field, CA 94035
Phone: 650-604-1179
nahri.i.ahn@nasa.gov

Ohio Department of Transportation

Fred Judson, UAS Director
4170 Allium Court
Springfield, OH 45505
Phone: 419-373-4497
Fred.Judson@dot.ohio.gov

Technical Points of Contact

NASA Ames Research Center

Richard Coppenbarger
AST, NAV GUID & CONTROL SYS
Moffett Field, CA 94035
Phone: 650-604-6440
richard.a.coppenbarger@nasa.gov

Ohio Department of Transportation

Richard Fox, Airspace Manager
4170 Allium Court
Springfield, OH 45505
Phone: 937-497-6740
Richard.Fox@dot.ohio.gov

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

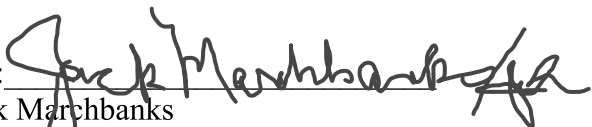
The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

**NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
AMES RESEARCH CENTER**

BY: _____
Dr. Huy K. Tran
Director of Aeronautics

DATE: _____

**OHIO DEPARTMENT OF
TRANSPORTATION**

BY:  _____
Jack Marchbanks
Director

DATE: 6.1.22